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(54) Title: PRESERVING A HEMOGLOBIN BLOOD SUBSTITUTE WITH A TRANSPARENT OVERWRAP

(57) Abstract: The invention relates to a method for preserving the stability of a hemoglobin blood substitute comprising maintaining the hemoglobin blood substitute in an atmosphere substantially free of oxygen. The method for preserving the deoxygenated hemoglobin blood substitute comprises maintaining the deoxygenated blood substitute in an oxygen barrier film overwrap package, wherein at least one face of the overwrap package comprises a transparent laminate material and wherein at least one other face of the overwrap package comprises a foil laminate material. The preserved deoxygenated hemoglobin blood substitute comprises a deoxygenated hemoglobin blood substitute and an oxygen barrier film overwrap package wherein at least one face of the overwrap package comprises a transparent laminate material and wherein at least one other face of the overwrap package comprises a foil laminate material.

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CLAIMS

The invention claimed is:

1. A method for preserving a packaged deoxygenated hemoglobin blood substitute comprising maintaining packaged deoxygenated hemoglobin blood substitute in an oxygen barrier film overwrap package, wherein at least one face of the overwrap package comprises a transparent laminate material and wherein at least one other face of the overwrap package comprises a foil laminate material.

2. The method of Claim 1, wherein the transparent laminate comprises a silicon oxide coated polyester film.

3. The method of Claim 1, wherein the overwrap package is produced by;
   a) forming said foil laminate to define at least one chamber,
   b) placing the packaged deoxygenated hemoglobin blood substitute into said chamber; and
   c) heat sealing the transparent laminate to the foil laminate, whereby said oxygen barrier film overwrap is formed, thereby containing the packaged hemoglobin blood substitute within the overwrap.

4. A method for preserving a packaged deoxygenated hemoglobin blood substitute in an oxygen barrier film overwrap package, wherein at least one face of the overwrap package comprises a transparent laminate material, comprising silicon oxide coated polyester film and wherein at least one other face of the overwrap package comprises a foil laminate material, wherein the overwrap is produced by;
   a) forming said foil laminate to define at least one chamber,
   b) placing the packaged deoxygenated hemoglobin blood substitute into said chambers; and

c) heat sealing the transparent laminate to the foil laminate whereby said oxygen barrier film overwrap is formed, thereby containing the packaged hemoglobin blood substitute within the overwrap.

5. The method of any one of Claims 1 or 4, wherein the hemoglobin blood substitute within the overwrap is maintained under a nitrogen, argon or helium atmosphere.

6. The method of Claims 1 or 4, wherein the overwrap has an oxygen permeability of less than about 0.01 cc per 645 square centimeters over 24 hours at one atmosphere and at about 23°C.

7. A preserved deoxygenated hemoglobin blood substitute, comprising:
   a) a packaged deoxygenated hemoglobin blood substitute; and
   b) an oxygen barrier film overwrap package containing the packaged deoxygenated hemoglobin blood substitute, wherein at least one face of the overwrap package comprises a transparent laminate material and wherein at least one other face of the overwrap package comprises a foil laminate material.

8. The preserved deoxygenated hemoglobin blood substitute of Claim 6 wherein the transparent laminate comprises a silicon oxide coated polyester film.

9. A preserved deoxygenated hemoglobin blood substitute comprising:
   a) a packaged deoxygenated hemoglobin blood subsitute; and
   b) an oxygen barrier film overwrap package, wherein at least one face of the overwrap package comprises a transparent laminate material and wherein at least one other face of the overwrap package comprises a foil laminate material, wherein the overwrap is produced by:
      i) forming said foil laminate to define at least one chamber;
      ii) placing the packaged deoxygenated hemoglobin blood substitute into said chambers; and

iii) heat sealing the transparent laminate to the foil laminate whereby said oxygen barrier film overwrap is formed thereby containing the packaged hemoglobin blood substitute within the overwrap.

10. The preserved deoxygenated blood substitute of Claims 7 or 9, wherein the hemoglobin blood substitute within the overwrap is maintained under a nitrogen, argon or helium atmosphere.

11. The preserved deoxygenated blood substitute of Claims 7 or 9, wherein the overwrap has an oxygen permeability of less than about 0.01 cc per 645 square centimeters over 24 hours at one atmosphere and at about 23°C.